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located a few miles north of Jubail, has been marked by a spar buoy by order of King Ibn Saud.

O'Shea states that while the divers on the Trucial Coast are rarely attacked by sharks, about 30 were attacked and two killed around 1940.[27] Whitelock states that the Arabs claimed that the danger of sharks was ever present, but that their worst fear was from the saw fish, which had been known to cut divers completely in two.[28]

Rihani writes that what the Persian Gulf pearl diver dreads most is the *dawl*. However, he apparently does not realize what the *dawl* is, merely quoting Sheikh Khalifah ibn Muhammad al-Nabhani's *History of Bahrein:* "The *dawl* is a semi-fluid animal, about the size of a man's hand, round in shape, with a multitude of tendons about two feet in length, resembling a network of silk. It has no power of locomotion, but is driven by the waves and currents hither and thither. If it comes in contact with the body of man, it burns it, leaving a deep scar; and if it is lifted out of the water and left in the sun for five minutes, it dissolves." [29]

The zoologist will immediately recognize this description of the *dawl* as a jellyfish. It is in fact a small bell-shaped jellyfish with two to three foot-long tentacles. The *dawl* swims at any level and is practically invisible underwater; thus the divers cannot keep away from the stinging tentacles, which will burn the body and can put out an eye. Along the Ras Tanura peninsula, the *dawl* is most often seen near the surface shortly before flood tides.

There is a species of needle urchin (*Diadema*) in the Persian Gulf with spines from one or two feet long.[30] It is known that these spines will produce nasty slow-healing wounds if bumped into under water. This urchin may be the cause of some of the open sores on the divers' legs, although salt water alone could cause them, for the Persian Gulf has the highest salt content of all the ocean bodies, and constant immersion in salt water is known to produce a rash. However, as the *Diadema* is black and several

[27] *Ibid.*, p. 138.
[28] H. H. Whitelock, *op. cit.*, p. 43.
[29] A. Rihani, *op. cit.*, p. 280.
[30] *Diadema* was first reported from the Persian Gulf by this author: A. H. Clark and R. LeB. Bowen, Jr., "Echinoderms of Saudi Arabia," *American Museum Novitates*, No. 1390 (1949).

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feet in diameter, it is easily seen under water, and thus more easily avoided than the *dawl*. The Arabs have no fear of the sea turtle and they relate that when they find one of these on the pearl banks, they ride it to the surface by grabbing it behind the neck and directing it upward.

But the dangers from sharks and devilfish (rays) are slight compared to the physical danger resulting from simply driving oneself past the limit of human endurance. The "bends" are a common affliction among the divers and may cause severe pains in the joints, paralysis, or even death. Suppuration of the eardrums and rheumatism are also common. The divers may lose blood from surfacing too quickly or from staying under too long; Frederick Simpich tells of seeing a man come up from a 10-fathom dive bleeding at the nose as if someone had hit him with a ball bat.[21] Whitelock states that the divers of the Trucial Coast were very emaciated and suffered from inflamed eyes, which they treated with antimony.[22]

Divers never eat while working, except for a sip of tea or water, as food would cause nausea. When the sun has sunk so low that diving stops, they eat a few dates or a little rice and drink a little tea, but that is all. This is one of the reasons why they become so weakened and emaciated during a season. Sleep is the only energy builder the divers have.

OPENING THE OYSTERS

With dawn the first activity of the day is the opening of the oysters caught the day before. By this time the oysters have been out of the water long enough for their shells to open, so that one does not have to fight them. The oysters are not divided according to divers, but are simply piled in sacks on the deck, so that no one knows exactly who caught the one that may contain the great pearl. After the valves are parted, the openers knead through the flesh, extract any pearls, and throw the shells and the meat overboard. Less than one-third of the oysters yield pearls and these are mostly "seed pearls," those very small irregularly-shaped pearls which might well be called "pearl dust."

[21] F. Simpich, *National Geographic Magazine*, vol. 36 (1919), pp. 369–93.
[22] H. H. Whitelock, *op. cit.*, pp. 38, 44.

3: Bowen C-4 (1945-1947) 1951 MK2 Maritime Arabs MK2

Each diver has two lines, one attached to a stone or iron diving weight; so that they will not become fouled, they are passed over sweeps left projecting over the gunwales athwartship and lashed down to the tholepins. The diver puts his feet into a loop over the diving weight (or simply lets the rope pass between his toes), releases the rope by untying a slipknot, and, holding the rope tightly, plummets to the bottom. As soon as he releases the line with the weight attached, the attendant hauls it to the surface. In the meantime the diver frantically plucks all the oysters he can before exhausting his air. He usually crawls on one hand and one foot, propelling himself with his free foot and collecting the oysters with his free hand. He puts the oysters into an open-weave palm-leaf basket fastened to his waist or around his neck, or hitched to a rope (which he holds or which is tied to his body). When he is ready to come to the surface, he jerks this rope.

The maximum depth at which the divers work is about 12 fathoms (72 feet). The average length of time they remain under water has been greatly exaggerated: some stories say 5 to 10 minutes. Villiers,[6] who spent two months on a buyer's *jalbut* with the Kuweit fleet, states that the divers stayed under water from 40 to 90 seconds, averaging about a minute. O'Shea[7] spent some time with the divers of the Trucial Coast, and he also states that the time averaged about a minute, ranging from 40 to 75 seconds. Hugh Smith[8] observes that the Arabs are the best divers employed in the Ceylon fisheries, staying down from 60 to 90 seconds; he cites an authentic case of an Arab who stayed down 109 seconds in 7 fathoms of water.

Ordinarily the diver remains under water for about a minute and rests for two or three minutes; on a good day he may make 30 or 40 dives, totaling half to three-quarters of an hour, and by the end of the season he may have completed more than 3000 dives in 30 to 50 feet of water.

The diver's worst enemy is fatigue. He has little fear of sharks and, indeed, is seldom bothered by them, though O'Shea[7] speaks of an attack on 30 divers, two of whom were killed under water. Whitelock[8] states that the greatest fear of divers on the Trucial Coast is the sawfish, which has been known to cut divers in two. The creature most feared by the divers in the Persian Gulf, at least on the north banks between Kuweit and Bahrein, is a jellyfish known to the Arabs as the *dawl*, which has two- to three-foot

[6] Alan Villiers: Sons of Sinbad, New York, 1940, p. 392.

[7] Raymond O'Shea: The Sand Kings of Oman, London, 1947, p. 137.

[8] H. M. Smith: The Pearl Fisheries of Ceylon, *Natl. Geogr. Mag.*, Vol. 23, 1912, pp. 173–194; reference on p. 182.

[7] *Op. cit.*, p. 138.

[8] H. H. Whitelock: An Account of the Arabs of the Pirate Coast, *Trans. Bombay Geogr. Soc.*, Vol. 1, 1844, pp. 32–49; reference on p. 43.

stinging tentacles that can easily put out an eye. There is also a needle urchin (*Diadema*), first reported from the Persian Gulf in 1949.[9] This urchin has spines more than a foot long, which can cause nasty, slow-healing wounds. However, as the urchin is several feet in diameter, black, and slow-moving, it is more easily avoided than the dawl.

Pearl divers suffer from a variety of diseases, most of which can be directly traced to their occupation. Open sores and skin ulcers result from encounters with the dawl and scrapes against coral and other sharp objects. Suppuration of the eardrums, rheumatism, and nosebleeds are common. Inflamed eyes are always a sign of the pearl diver. Persian Gulf divers are more susceptible to the "bends" than divers who use suits, since they must surface as rapidly as possible.

Divers never eat while they are working. When the day's diving is finished, the diver has some rice, dates, and tea, but not much else; sleep is his only energy builder. Every 10 days or so the divers get a rest, and every three weeks or so the dhows put in for food and water unless they have been revictualed at sea.

In recent years Ras Tanura has become a center of activity for the pearling fleet off its shores; for the oil company's installations can now pump an abundance of fresh water into the water tanks of the dhows much faster than it can be transferred by waterskins. The larger vessels anchor for the night on the banks; the smaller vessels sometimes take shelter if it is available. Some vessels of the pearling fleet replenish their water supply from the submarine springs that gush into the Persian Gulf in numerous places along the Arabian littoral. Relatively fresh water can be brought up in a waterskin by a diver. One of these springs, marked by a spar buoy, is to be found a few miles north of Jubail.

The first duty of the day on a pearling dhow is opening the previous day's oysters, which are heaped on deck in a large pile so that no one knows who found the oyster which may produce the rare gem. The muscles of the oysters relax enough overnight so that it is not difficult to open them. Less than a third of the oysters yield pearls, and these are usually only very small seed pearls.

Pearls are sometimes bought on the pearl banks by brokers who travel around in their own boats trying to get the best pearls before other brokers hear of them, and trying to get a valuable pearl before a nakhoda realizes its value. But whether the pearls are sold on the banks or at Bahrein, they all find

[9] A. H. Clark and R. LeB. Bowen, Jr., Echinoderms of Tarut Bay and Vicinity, Saudi Arabia, *Amer. Museum Novitates*, No. 1390, 1949.